

<b>SOLICITATION, OFFER AND AWARD</b>		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)		RATING <b>DO-C9</b>	PAGE OF <b>1</b>   <b>28</b> PAGES
2. CONTRACT NO.	3. SOLICITATION NO. <b>N00173-04-R-JR01</b>	4. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)		5. DATE ISSUED <b>17 Dec 2003</b>	6. REQUISITION/PURCHASE NO. <b>76-5010-04</b>
7. ISSUED BY <b>CONTRACTING OFFICER NAVAL RESEARCH LABORATORY-SSC CODE 3235 STENNIS SPACE CENTER, MS 39529-5004</b>		CODE <b>N00173</b>	8. ADDRESS OFFER TO (If other than Item 7)		

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

### SOLICITATION

9. Sealed offers in original and 3 copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if handcarried, in the depository located in **BLDG 1007, RM 44** until **4:00pm** local time **20 Jan 04**  
(Hour) (Date)

CAUTION - LATE Submissions, Modifications, and Withdrawals: See Section I, Provision No. 52.214-7 or 52.215-10. All offers are subject to all terms and conditions contained in this solicitation.

10. FOR INFORMATION CALL:	A. NAME <b>MR JERRY RILES</b>	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) <b>(228) 688-4259</b>
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### OFFER (Must be fully completed by offeror)

NOTE: Item 12 does not apply if the solicitation includes the provisions at 52.214-16, Minimum Bid Acceptance Period.

12. In compliance with the above, the undersigned agrees, if this offer is accepted within 60 calendar days (60 calendar days unless a different period is inserted by the offeror) from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

13. DISCOUNT FOR PROMPT PAYMENT (See Section I, Clause No. 52-232-8)	10 CALENDAR DAYS	%	20 CALENDAR DAYS	%	30 CALENDAR DAYS	%	CALENDAR DAYS	%
14. ACKNOWLEDGMENT OF AMENDMENTS (The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated:	AMENDMENT NO.		DATE		AMENDMENT NO.		DATE	

15A. NAME AND ADDRESS OF OFFEROR	CODE	FACILITY	16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)
15B. TELEPHONE NO. (Include area code)	15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE.		17. SIGNATURE
			18. OFFER DATE

### AWARD (To be completed by Government)

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION	
22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: <input type="checkbox"/> 10 U.S.C. 2304(c) ( ) <input type="checkbox"/> 41 U.S.C. 253(c) ( )		23. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified)	
		24. ADMINISTERED BY (If other than Item 7) CODE	
25. PAYMENT WILL BE MADE BY CODE		26. NAME OF CONTRACTING OFFICER (Type or print)	
27. UNITED STATES OF AMERICA (Signature of Contracting Officer)		28. AWARD DATE	

IMPORTANT - Award will be made on this Form, or on Standard Form 26, or by other authorized official written notice.

**PART I - THE SCHEDULE  
SECTION B  
SUPPLIES OR SERVICES AND PRICES/COSTS**

**B-1 SUPPLIES/SERVICES AND COSTS**

<b>ITEM NUMBER</b>	<b>SUPPLIES/SERVICES</b>	<b>ESTIMATED COST</b>	<b>FIXED FEE</b>	<b>ESTIMATED COST PLUS FIXED FEE</b>
<b><u>BASE</u></b>				
0001	The Contractor shall provide Science, Software, and Engineering support for Space-Based and Ground-Based Optical Experiments in accordance with Section C.	\$	\$	\$
0002	Data in accordance with Exhibit A (DD 1423)	* NSP	* NSP	* NSP
<b>TOTAL ESTIMATED COST PLUS FIXED FEE BASE</b>		\$	\$	\$

*\* Not Separately Priced*

**NOTICE TO OFFERORS:** In addition to inserting the estimated cost and fixed fee for the base year above, the estimated cost and fixed fee for each optional extension of the term of the contract are to be inserted in Section H.

**SECTION C**  
**DESCRIPTION/SPECIFICATIONS/STATEMENT OF WORK**

**C-1 STATEMENT OF WORK**

The work and services to be performed hereunder shall be subject to the requirements and standards contained in Attachment (1), Statement of Work, with Exhibit A, Contract Data Requirements List, and all other Attachments cited in Section J, which are incorporated by reference into Section C.

**C-2 REQUIREMENTS FOR ON-SITE CONTRACTORS**

For those portions of the work under this contract performed at any NRL site, the contractor shall comply with the Requirements for On-Site Contractors dated 08 October 2002 which are hereby incorporated by reference. The full text is available at <http://heron.nrl.navy.mil/contracts/home.htm>.

**C-3 SUBCONTRACTING PLAN**

Subcontracting Plan \_\_\_\_\_ dated \_\_\_\_\_ is hereby incorporated by reference and made a material part of this contract.

*(\*this provision will be included and completed at time of award, if applicable)*

**SECTION D**  
**PACKAGING AND MARKING**

**D-1 PACKAGING AND MARKING**

Preservation, packaging, packing and marking of all deliverable contract line items must conform to normal commercial packing standards to assure safe delivery at destination.

**SECTION E**  
**INSPECTION AND ACCEPTANCE**

**E-1 INSPECTION AND ACCEPTANCE CLAUSES INCORPORATED BY REFERENCE**

**FAR CLAUSE    TITLE**

52.246-9       -    Inspection Of Research And Development (Short Form) (APR 1984)

**DFARS CLAUSE    TITLE**

252.246-7000   -    Material Inspection And Receiving Report (MAR 2003)

**E-2 INSPECTION AND ACCEPTANCE**

Inspection and acceptance of the final delivery will be accomplished by the Technical Manager (TM) or Contracting Officer Representative (COR) designated in Section G of this contract. Inspection and acceptance will be performed at the Naval Research Laboratory, Washington DC 20375-5320.

**SECTION F**  
**DELIVERIES OR PERFORMANCE**

**F-1 DELIVERIES OR PERFORMANCE CLAUSES INCORPORATED BY REFERENCE:**

**FAR CLAUSE    TITLE**

52.242-15    -    Stop-Work Order (AUG 1989) - Alternate I (APR 1984)  
52.247-34    -    F.O.B. Destination (NOV 1991)

**F-2 PERIOD AND PLACE OF PERFORMANCE**

- (a) The term of this contract is from date of contract award through one year thereafter. Each option, if exercised, shall extend the term an additional year.
- (b) The principal place of performance of this contract shall be:  
**Naval Research Laboratory, DC**

**SECTION G**  
**CONTRACT ADMINISTRATION DATA**

**G-1 PROCURING OFFICE REPRESENTATIVE**

In order to expedite administration of the contract, the Administrative Contracting Officer (ACO) will direct inquiries to the appropriate office listed below. Please do not direct routine inquiries to the person listed in Item 20A on Standard Form 26.

Security Matters- Contracting Officer for Security, Code 1221, (202) 767-2240, DSN 297-2240, email  
[security-group@nrl.navy.mil](mailto:security-group@nrl.navy.mil)

Safety Matters- Head Safety Branch, Code 3540, (202) 767-2232, DSN 297-2232, email  
[safety@nrl.navy.mil](mailto:safety@nrl.navy.mil)

Patent Matters-Associate Counsel (Intellectual Property), Code 1008.2, (202) 404-1552, DSN 297-1552, email [patents@nrl.navy.mil](mailto:patents@nrl.navy.mil)

Release of Data-Public Affairs Officer, Code 1030 (202) 767-2541, DSN 297-2541, email  
[publicaffairs@nrl.navy.mil](mailto:publicaffairs@nrl.navy.mil)

**G-2 CONTRACTING OFFICER'S REPRESENTATIVE (COR) - FUNCTIONS AND LIMITATIONS**

\* is hereby designated the cognizant COR who will represent the Contracting Officer in the administration of technical details within the scope of this contract and inspection and acceptance. The COR is not otherwise authorized to make any representations or commitments of any kind on behalf of the Contracting Officer or the Government. The COR does not have the authority to alter the Contractor's obligations or change the specifications in the contract. If, as a result of technical discussions, it is desirable to alter contract obligations or statements of work, a modification must be issued in writing and signed by the Contracting Officer. The COR is responsible for reviewing the bills and charges submitted by the Contractor and informing the ACO of areas where exceptions are to be taken.

( \* To be completed at time of award)

**G-3 TECHNICAL DIRECTION MEMORANDUM (TDM)**

- (a) For the purposes of this clause, technical direction includes the following:
  - (1) Direction to the Contractor which shifts work emphasis between work areas or tasks, requires pursuit of certain lines of inquiry, fills in details or otherwise describes work which will accomplish the objectives described in the statement of work;
  - (2) Guidelines to the Contractor, which assist in interpretation of drawings, specifications or technical portions of, work description.
- (b) Technical instructions must be within the scope of work stated in the contract. Technical instructions may not be used to:
  - (1) Assign additional work under the contract;
  - (2) Direct a change as defined in the contract clause entitled "Changes";
  - (3) Increase or decrease the estimated contract cost, the fixed fee, or the time required for contract performance; or
  - (4) Change any of the terms, conditions or specifications of the contract
- (c) The TDM shall be written by the Contracting Officer's Representative (COR), with the original given to the Contractor and a copy retained in the CORs file. Technical direction may be issued orally only in emergency situations. If technical direction is issued orally, a TDM must follow within two (2) working days from the date of the oral direction. Amendments, corrections, or changes to TDMs shall also be in written format and shall include all the information set forth in paragraph (e) below.
- (d) A TDM shall be considered issued when the Government deposits it in the mail, or if transmitted by other means, when it is physically delivered to the contractor.
- (e) TDMs shall include, but not be limited to, the following information:
  - (1) Date of TDM,
  - (2) Contract Number,
  - (3) Reference to the relevant portion or item in the Statement of Work,
  - (4) The specific technical direction or clarification, and
  - (5) The signature of the COR.
- (f) CORs shall retain all files containing TDMs for a period of two (2) years after the final contract completion date.

(g) The only individual authorized in any way to amend or modify any of the terms of this contract shall be the Contracting Officer. When, in the opinion of the Contractor, any technical direction calls for effort outside the scope of the contract or inconsistent with this special provision, the Contractor shall notify the Contracting Officer in writing within ten (10) working days after its receipt.

#### G-4 CONTRACTOR-ACQUIRED PROPERTY

(a) The contractor is authorized to acquire the following items of facilities, which are needed to accomplish this contract.

Items to be Acquired	Estimated Cost
*	

*(\*this provision will be included and completed at time of award, if applicable)*

(b) This authorization does not constitute any consent required pursuant to the contract clause entitled "Subcontracts" (FAR 52.244-2). Advance notification or requests for consent pursuant to that clause shall be directed to the administrative contracting officer (ACO).

(c) Pursuant to the contract clause entitled "Government Property (Cost-Reimbursement, Time-and-Material, or Labor-Hour Contracts)" (FAR 52.245-5), title to the property shall vest in the Government.

(d) Prior to acquisition of any item of Industrial Plant Equipment, the Contractor must comply with the requirements of Department of Defense Federal Acquisition Regulation Supplement (DFARS 245.302-1(b)(1)(A). (See DFARS 245.301 for definition of "Industrial Plant Equipment.")

#### G-5 SUBCONTRACTORS/CONSULTANTS

(a) Advance notification or requests for consent pursuant to the contract clause entitled "Subcontracts" (FAR 52.244-2) shall be directed to the cognizant administrative contracting officer (ACO).

(b) The following subcontractors/consultants have been identified in the Contractor's proposal as necessary for performance of this contract:

Subcontractor/Consultant Name	Estimated Cost

*(Paragraph (b) will be included and filled in at time of award if subcontractor/consultants are proposed by the successful offeror)*

**G-6 NAPS 5252.232-9001 - SUBMISSION OF INVOICES (COST-REIMBURSEMENT, TIME-AND-MATERIALS, LABOR-HOUR, OR FIXED PRICE INCENTIVE (JUL 1992)**

(a) "Invoice" as used in this clause includes contractor requests for interim payments using public vouchers (SF 1034) but does not include contractor requests for progress payments under fixed price incentive contracts.

(b) The Contractor shall submit invoices and any necessary supporting documentation, in an original and 4 copies, to the contract auditor at the following address:

*(To be completed at time of award)*

unless delivery orders are applicable, in which case invoices will be segregated by individual order and submitted to the address specified in the order. In addition, an information copy shall be submitted to [See Section G for designated COR]. Following verification, the contract auditor will forward the invoice to the designated payment office for payment in the amount determined to be owing, in accordance with the applicable payment (and fee) clause(s) of this contract.

(c) Invoices requesting interim payments shall be submitted no more than once every two weeks, unless another time period is specified in the Payments clause of this contract. For indefinite delivery type contracts, interim payment invoices shall be submitted no more than once every two weeks for each delivery orders. There shall be a lapse of no more than 30 calendar days between performance and submission of an interim payment invoice.

(d) In addition to the information identified in the Prompt Payment clause herein, each invoice shall contain the following information, as applicable:

- (1) Contract line item number (CLIN)
- (2) Subline item number (SLIN)
- (3) Accounting Classification Reference Number (ACRN)
- (4) Payment terms
- (5) Procuring activity
- (6) Date supplies provided or services performed
- (7) Costs incurred and allowable under the contract
- (8) Vessel (e.g., ship, submarine or other craft) or system for which supply/service is provided

(e) A DD Form 250, "Material Inspection and Receiving Report",

- ☐ is required with each invoice submittal.  
☒ is required only with the final invoice.  
☐ is not required.

(f) A Certificate of Performance

- ☐ shall be provided with each invoice submittal.  
☒ is not required.

(g) The Contractor's final invoice shall be identified as such, and shall list all other invoices (if any) previously tendered under this contract.

(h) Cost of performance shall be segregated, accumulated and invoiced to the appropriate ACRN categories to the extent possible. When such segregation of costs by ACRN is not possible for invoices submitted with CLIN/SLINS with more than one ACRN, an allocation ratio shall be established in the same ratio as the obligations cited in the accounting data so that costs are allocated on a proportional basis.

**G-7 INCREMENTAL FUNDING**

Pursuant to the Limitation of Funds clause (FAR 52.232-22), the total amount allotted to this contract is \$\* and it is estimated that this amount is sufficient for contract performance through \* .  
*(\*this provision will be included and completed at time of award, if applicable)*

**G-8 INFORMATIONAL SUBLINE ITEMS**

It is anticipated that the research and development services performed under this contract will be paid for from multiple sources of funds. Informational subline items will be established as necessary to identify each accounting citation classification.

**G-9 SPECIAL PAYMENT INSTRUCTIONS- MULTIPLE ACCOUNTING CLASSIFICATION CITATIONS (COST-REIMBURSEMENT)**

Payments shall be made in accordance with the ACRN(s) cited on the contractor's invoice. The Contractor may contact the COR regarding which ACRN(s) to cite on an invoice.

**SECTION H  
SPECIAL CONTRACT REQUIREMENTS****H-1 TYPE OF CONTRACT**

This is a \*

*(\*To be completed at time of award)*

**H-2 ONR 5252.237-9705 - KEY PERSONNEL (DEC 88)**

- (a) The Contractor agrees to assign to the contract tasks those persons whose resumes were submitted with its proposal and who are necessary to fulfill the requirements of the contract as "key personnel". No substitutions may be made except in accordance with this clause.
- (b) The Contractor understands that during the first ninety (90) days of the contract performance period, no personnel substitutions will be permitted unless these substitutions are unavoidable because of the incumbent's sudden illness, death or termination of employment. In any of these events, the Contractor shall promptly notify the Contracting Officer and provide the information described in paragraph (c) below. After the initial ninety (90) day period the Contractor must submit to the Contracting Officer all proposed substitutions, in writing, at least thirty (30) days in advance (sixty (60) days if security clearance must be obtained) of any proposed substitution and provide the information required by paragraph (c) below.
- (c) Any request for substitution must include a detailed explanation of the circumstances necessitating the proposed substitution, a resume for the proposed substitute, and any other information requested by the Contracting Officer. Any proposed substitute must have qualifications equal to or superior to the qualifications of the incumbent. The Contracting Officer or his/her authorized representative will evaluate such requests and promptly notify the Contractor of his/her approval or disapproval thereof.



(d) In the event that any of the identified key personnel cease to perform under the contract and the substitute is disapproved, the contract may be immediately terminated in accordance with the Termination clause of the contract.

The following are identified as key personnel: \*

*(\*To be completed at time of award)*

Labor Category	First/M/Last Name
Senior Scientist	*
Senior Physicist	*
Senior Software Engineer	*
Senior Software Architect	*

### H-3 ONR 5252.216-9706 - LEVEL OF EFFORT (DEC 88)

(a) The Contractor agrees to provide the total level of effort specified in the next sentence in performance of the work described in this contract. The total level of effort for performance of this contract shall be 34,200 total hours of direct labor for the base award, and if exercised, 47,500 total hours of direct labor for each option period, including subcontractor direct labor for those subcontractors specifically identified in the Contractor's proposal as having hours included in the proposed level of effort. A breakdown of labor categories and hours is set forth in paragraph (k) below.

(b) The level of effort for this contract shall be expended at an average rate of 2,850 hours per month for the base award, and if exercised, 3,958 hours per month for each option period. It is understood and agreed that the rate of hours per month may fluctuate in pursuit of the technical objective, provided such fluctuation does not result in the use of the total hours of effort prior to the expiration of the term of the contract.

(c) The Contractor is required to notify the Contracting Officer when any of the following situations occur, or are anticipated to occur: If during any three consecutive months the monthly average is exceeded by 25% or, if at any time it is forecast that during the last three months of the contract less than 50% of the monthly average will be used during any given month; or, when 85% of the total level of effort has been expended.

(d) If, during the term of the contract, the Contractor finds it necessary to accelerate the expenditure of direct labor to such an extent that the total hours of effort specified would be used prior to the expiration of the term, the Contractor shall notify the Contracting Officer in writing, setting forth the acceleration required, the probable benefits which would result, and an offer to undertake the acceleration at no increase in the estimated cost or fixed fee together with an offer setting forth a proposed level of effort, cost breakdown, and proposed fixed fee for continuation of the work until expiration of the term hereof. The offer shall provide that the work proposed will be subject to the terms and conditions of this contract and any additions or changes required by then current law, regulations, or directives, and that the offer, with a written notice of acceptance by the Contracting Officer, shall constitute a binding contract. The Contractor shall not accelerate any effort until receipt of such written approval by the Contracting Officer. Any agreement to accelerate will be formalized by contract modification.

(e) The Contracting Officer may, by written order, direct the Contractor to accelerate the expenditure of direct labor such that the total hours of effort specified in paragraph (a) above would be used prior to the expiration of the term. This order shall specify the acceleration required and the resulting revised term. The Contractor shall acknowledge this order within five days of receipt.

(f) If the total level of effort specified in paragraph (a) above is not provided by the Contractor during the term of this contract, the Contracting Officer shall either (i) reduce the fixed fee of this contract as follows:

$$\text{Fee Reduction} = \text{Fixed Fee} \times \frac{(\text{Required LOE Hours} - \text{Expended LOE Hours})}{\text{Required LOE Hours}}$$

or (ii) subject to the provisions of the clause of this contract entitled "Limitation of Cost," require the Contractor to continue to perform the work until the total number of hours of direct labor specified in paragraph (a) shall have been expended, at no increase in the fixed fee of this contract.

(g) In the event the government fails to fully fund the contract in a timely manner, the term of the contract may be extended accordingly with no change to cost or fee. If the government fails to fully fund the contract, the fee will be adjusted in direct proportion to that effort which was performed.

(h) Notwithstanding any of the provisions in the above paragraphs, the Contractor may furnish hours up to five percent in excess of the total hours specified in paragraph (a) above, provided that the additional effort is furnished within the term hereof, and provided further that no increase in the estimated cost or fixed fee is required, and no adjustment in the fixed fee shall be made provided that the Contractor has delivered at least 95% of the level of effort required in paragraph (a) above.

(i) It is understood that the mix of labor categories provided by the Contractor under the contract, as well as the distribution of effort among those categories, may vary considerably from the initial mix and distribution of effort which was estimated by the government or proposed by the Contractor.

(j) Nothing herein shall be construed to alter or waive any of the rights or obligations of either party pursuant to the Clause entitled "Limitation of Costs" or "Limitation of Funds," either of which clauses as incorporated herein applies to this contract.

(k) The anticipated breakdown by labor category of the total level of effort is as follows:

<u>LABOR CATEGORY</u>	<u>BASE</u>	<u>OPTION 1</u>	<u>OPTION 2</u>	<u>OPTION 3</u>	<u>OPTION 4</u>
Senior Scientist	3,800	5,700	5,700	5,700	5,700
Scientist	3,800	3,800	3,800	3,800	3,800
Senior Physicist	3,800	5,700	5,700	5,700	5,700
Physicist	7,600	9,500	9,500	9,500	9,500
Scientific Programmer	5,700	9,500	9,500	9,500	9,500
Senior Software Engineer	7,600	7,600	7,600	7,600	7,600
Senior Software Architect	<u>1,900</u>	<u>5,700</u>	<u>5,700</u>	<u>5,700</u>	<u>5,700</u>
<b>TOTAL HOURS</b>	<b>34,200</b>	<b>47,500</b>	<b>47,500</b>	<b>47,500</b>	<b>47,500</b>

#### H-4 ONR 5252.235-9714 - REPORT PREPARATION (FEB 02)

Scientific or technical reports prepared by the Contractor and deliverable under the terms of this contract will be prepared in accordance with format requirements contained in ANSI/NISO Z39.18-1995, Scientific and Technical Reports: Elements, Organization, and Design.

[NOTE: All NISO American National Standards are available as free, downloadable pdf(s) at <http://www.niso.org/standards/index.html> . NISO standards can also be purchased in hardcopy form from NISO Press Fulfillment, P. O. Box 451, Annapolis Junction, MD 20701-0451 USA. Telephone U.S. and Canada: (877) 736-6476; Outside the U.S. and Canada: 301-362-6904 ax: 301-206-9789.]

#### H-5 ELECTRONIC AND INFORMATION TECHNOLOGY (EIT)

In accordance with Section 508 of the Rehabilitation Act of 1973 (29 U.S.C. 794d), all EIT supplies and services provided under this contract must comply with the applicable accessibility standards issued by the Architectural and Transportation Barriers Compliance Board at 36 CFR part 1194 (see FAR Subpart 39.2). Electronic and information technology (EIT) is defined at FAR 2.101.

#### H-6 OPTION TO EXTEND THE TERM OF THE CONTRACT

This contract shall be renewable at the unilateral option of the Government by the Contracting Officer giving written notice of renewal to the Contractor within the existing term of the contract. The Government may exercise its option to renew the contract a total of four (4) times and each such renewal shall extend the term of the contract by twelve (12) months. The Contractor agrees that performance under each such renewal shall be accomplished in accordance with all of the terms and conditions of this contract and at the estimated cost and fixed fee set forth below:

##### First Option

Estimated Cost:	\$ _____
Fixed Fee:	\$ _____
Estimated Cost Plus Fixed Fee:	\$ _____

##### Second Option

Estimated Cost:	\$ _____
Fixed Fee:	\$ _____
Estimated Cost Plus Fixed Fee:	\$ _____

**Third Option**

Estimated Cost: \$ \_\_\_\_\_  
Fixed Fee: \$ \_\_\_\_\_  
Estimated Cost Plus Fixed Fee: \$ \_\_\_\_\_

**Fourth Option**

Estimated Cost: \$ \_\_\_\_\_  
Fixed Fee: \$ \_\_\_\_\_  
Estimated Cost Plus Fixed Fee: \$ \_\_\_\_\_

**H-7 ON-SITE USE OF GOVERNMENT PROPERTY**

It is anticipated that Government property will be used by the contractor's personnel in the performance of that portion of the contract performed on-site at the U.S. Naval Research Laboratory (NRL) including any of its field sites. Such use will be on a rent free basis and all such property shall be considered to remain in the possession and control of the NRL for property responsibility and accountability purposes.

**H-8 REPRESENTATIONS AND CERTIFICATIONS**

The Contractor's completed Representations, Certifications, and Other Statements of Offerors or Respondents is incorporated herein by reference in any resultant award.

**H-9 SUBCONTRACTING PLAN**

The contractor's Comprehensive Small Business Subcontracting Plan is incorporated into this contract in accordance with DFARS SUBPART 219.7 *Test Program for Negotiation of Comprehensive Small Business Subcontracting Plans*.

**PART II - CONTRACT CLAUSES**  
**SECTION I**  
**CONTRACT CLAUSES**

**I-1 52.252-2 - CLAUSES INCORPORATED BY REFERENCE (FEB 1998)**

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

<http://www.arnet.gov/far>

<http://heron.nrl.navy.mil/contracts/home.htm>

**a. FEDERAL ACQUISITION REGULATION CLAUSES**

<b>FAR CLAUSE</b>	<b>TITLE</b>
52.202-1	- Definitions (DEC 2001)
52.203-3	- Gratuities (APR 1984)
52.203-5	- Covenant Against Contingent Fees (APR 1984)
52.203-6	- Restrictions On Subcontractor Sales To The Government (JUL 1995)
52.203-7	- Anti-Kickback Procedures (JUL 1995)
52.203-8	- Cancellation, Rescission, And Recovery Of Funds For Illegal Or Improper Activity (JAN 1997)
52.203-10	- Price Or Fee Adjustment For Illegal Or Improper Activity (JAN 1997)
52.203-12	- Limitation On Payments To Influence Certain Federal Transactions (JUN 2003)
52.204-2	- Security Requirements (AUG 1996)
52.204-4	- Printed Or Copied Double-Sided On Recycled Paper (AUG 2000)
52.209-6	- Protecting The Government's Interest When Subcontracting With Contractors Debarred, Suspended, Or Proposed For Debarment (JUL 1995)
52.211-15	- Defense Priority And Allocation Requirements (SEP 1990)
52.215-2	- Audit And Records-Negotiation (JUN 1999)
52.215-2	- Audit And Records-Negotiation (JUN 1999) - Alternate II (APR 1998)
52.215-8	- Order Of Precedence - Uniform Contract Format (OCT 1997)
52.215-10	- Price Reduction For Defective Cost Or Pricing Data (OCT 1997)
52.215-11	- Price Reduction For Defective Cost Or Pricing Data - Modifications (OCT 1997)
52.215-12	- Subcontractor Cost Or Pricing Data (OCT 1997)
52.215-13	- Subcontractor Cost Or Pricing Data Modifications (OCT 1997)
52.215-14	- Integrity Of Unit Prices (OCT 1997)
52.215-15	- Pension Adjustments And Asset Reversions (DEC 1998)
52.215-17	- Waiver Of Facilities Capital Cost Of Money (OCT 1997) ( will be included if the successful offeror does not propose facilities capital cost of money)
52.215-18	- Reversion Or Adjustment Of Plans For Post-Retirement Benefits (PRB) Other Than Pensions (OCT 1997)
52.215-19	- Notification Of Ownership Changes (OCT 1997)
52.215-21	- Requirements For Cost Or Pricing Data Or Information Other Than Cost or Pricing Data -Modifications (OCT 1997)

- 52.216-7 - Allowable Cost And Payment (DEC 2002) (fill in 30th
- 52.216-8 - Fixed-Fee (MAR 1997)
- 52.219-4 - Notice Of Price Evaluation Preference For HUBZone Small Business Concerns (JAN 1999) ☐ Offeror elects to waive the evaluation preference.
- 52.219-8 - Utilization Of Small Business Concerns (OCT 2000)
- 52.219-9 - Small Business Subcontracting Plan (JAN 2002) - Alternate II (OCT 2001)
- 52.219-16 - Liquidated Damages-Subcontracting Plan (JAN 1999)
- 52.222-2 - Payment For Overtime Premiums (JUL 1990) -The Use Of Overtime Is Authorized Under This Contract If The Overtime Premium Does Not Exceed "0"
- 52.222-3 - Convict Labor (JUN 2003)
- 52.222-21 - Prohibition Of Segregated Facilities (FEB 1999)
- 52.222-26 - Equal Opportunity (APR 2002)
- 52.222-35 - Equal Opportunity For Special Disabled Veterans, Veterans Of The Vietnam Era, And Other Eligible Veterans (DEC 2001)
- 52.222-36 - Affirmative Action For Workers With Disabilities (JUN 1998)
- 52.222-37 - Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, And Other Eligible Veterans (DEC 2001)
- 52.223-3 - Hazardous Material Identification And Material Safety Data (JAN 1997)
- 52.223-5 - Pollution Prevention And Right-To-Know Information (AUG 2003)
- 52.223-6 - Drug-Free Workplace (MAY 2001)
- 52.223-10 - Waste Reduction Program (AUG 2000)
- 52.223-14 - Toxic Chemical Release Reporting (AUG 2003)
- 52.225-13 - Restrictions On Certain Foreign Purchases (OCT 2003)
- 52.227-1 - Authorization And Consent (JUL 1995)- Alternate I (APR 1984)
- 52.227-2 - Notice And Assistance Regarding Patent And Copyright Infringement (AUG 1996)
- 52.227-10 - Filing Of Patent Application- Classified Subject Matter (APR 1984)
- 52.227-11 - Patent Rights - Retention By The Contractor (Short Form) (JUN 1997)  
*(will be included if the successful offeror is a small business or a non-profit organization)*
- 52.227-12 - Patent Rights - Retention By The Contractor (Long Form) (JAN 1997)  
*(will be included if the successful offeror is not a small business or a non-profit organization)*
- 52.227-13 - Patent Rights - Acquisition By The Government (JAN 1997)
- 52.228-7 - Insurance - Liability To Third Persons (MAR 1996)
- 52.230-2 - Cost Accounting Standards (APR 1998)
- 52.230-3 - Disclosure And Consistency Of Cost Accounting Practices (APR 1998)
- 52.230-6 - Administration Of Cost Accounting Standards (NOV 1999)
- 52.232-9 - Limitation On Withholding Of Payments (APR 1984)
- 52.232-17 - Interest (JUN 1996)
- 52.232-18 - Availability Of Funds (APR 1984)
- 52.232-20 - Limitation Of Cost (APR 1984) *(Applicable when the contract or task order is fully funded)*
- 52.232-22 - Limitation Of Funds (APR 1984) *(Applicable when the contract or task order is not fully funded)*

- 52.232-23 - Assignment Of Claims (JAN 1986) Alternate I (APR 1984)
- 52.232-25 - Prompt Payment (OCT 2003)
- 52.232-33 - Payment By Electronic Funds Transfer-Central Contractor Registration (OCT 2003)
- 52.233-1 - Disputes (JUL 2002)
- 52.233-3 - Protest After Award (AUG 1996) - Alternate I (JUN 1985)
- 52.237-2 - Protection Of Government Buildings, Equipment And Vegetation (APR 1984)
- 52.237-3 - Continuity Of Services (JAN 1991)
- 52.242-1 - Notice Of Intent To Disallow Costs (APR 1984)
- 52.242-3 - Penalties For Unallowable Costs (MAY 2001)
- 52.242-4 - Certification of Final Indirect Costs (JAN 1997)
- 52.242-13 - Bankruptcy (JUL 1995)
- 52.243-2 - Changes - Cost-Reimbursement (AUG 1987) - Alternate V (APR 1984)
- 52.243-6 - Change Order Accounting (APR 1984)
- 52.243-7 - Notification Of Changes (APR 1984) fill in 30
- 52.244-2 - Subcontracts (AUG 1998) - Alternate I (AUG 1998)
- 52.244-5 - Competition In Subcontracting (DEC 1996)
- 52.244-6 - Subcontracts For Commercial Items And Commercial Components (APR 2003)
- 52.245-5 - Government Property (Cost-Reimbursement, Time-And-Material, Or Labor-Hour Contracts) (JUN 2003) (DEVIATION)
- 52.245-19 - Government Property Furnished "As-Is" (APR 1984)
- 52.246-23 - Limitation Of Liability (FEB 1997)
- 52.247-1 - Commercial Bill Of Lading Notations (APR 1984)
- 52.247-63 - Preference For U. S. Flag Carriers (JUN 2003)
- 52.249-6 - Termination (Cost-Reimbursement) (SEP 1996)
- 52.249-14 - Excusable Delays (APR 1984)
- 52.251-1 - Government Supply Sources (APR 1984)
- 52.252-6 - Authorized Deviations in Clauses (APR 1984)( fill in Defense Federal Acquisition Regulation Supplement (48 CFR Chapter 2))
- 52.253-1 - Computer Generated Forms (JAN 1991)

**b. DEPARTMENT OF DEFENSE FEDERAL ACQUISITION REGULATION CLAUSES**

**DFARS CLAUSE    TITLE**

- 252.201-7000 - Contracting Officer's Representative (DEC 1991)
- 252.203-7001 - Prohibition On Persons Convicted Of Fraud Or Other Defense Contract Related Felonies (MAR 1999)
- 252.203-7002 - Display Of DoD Hotline Poster (DEC 1991)
- 252.204-7000 - Disclosure Of Information (DEC 1991)
- 252.204-7003 - Control Of Government Personnel Work Product (APR 1992)
- 252.204-7004 - Required Central Contractor Registration (NOV 2001)
- 252.204-7005 - Oral Attestation Of Security Responsibilities (NOV 2001)
- 252.205-7000 - Provision Of Information To Cooperative Agreement Holders (DEC 1991)

- 252.209-7000 - Acquisition From Subcontractors Subject To On-Site Inspection Under The Intermediate-Range Nuclear Forces (INF) Treaty (NOV 1995)
- 252.209-7004 - Subcontracting With Firms That Are Owned Or Controlled By The Government Of A Terrorist Country (MAR 1998)
- 252.215-7000 - Pricing Adjustments (DEC 1991)
- 252.219-7003 - Small Business And Small Disadvantaged Business Subcontracting Plan (DoD Contracts) (APR 1996)
- 252.219-7004 - Small, Small Disadvantaged And Women-Owned Small Business Subcontracting Plan (Test Program) (JUN 1997)
- 252.223-7004 - Drug-Free Work Force (SEP 1988)
- 252.223-7006 - Prohibition On Storage And Disposal Of Toxic And Hazardous Materials (APR 1993)
- 252.225-7002 - Qualifying Country Sources As Subcontractors (APR 2003)
- 252.225-7012 - Preference For Certain Domestic Commodities (FEB 2003)
- 252.225-7031 - Secondary Arab Boycott Of Israel (APR 2003)
- 252.225-7043 - Antiterrorism/Force Protection Policy For Defense Contractors Outside The United States (JUN 1998) (fill in : Naval Criminal Investigative Service (NCIS), Code 24, telephone, DSN 228-9113 or commercial (202)433-9113)
- 252.226-7001 - Utilization Of Indian Organizations and Indian-Owned Economic Enterprises-DoD Contracts (SEP 2001)
- 252.227-7000 - Non Estoppel (OCT 1966)
- 252.227-7001 - Release Of Past Infringement (AUG 1984)
- 252.227-7013 - Rights In Technical Data -- Noncommercial Items (NOV 1995) - Alternate I (JUN 1995)
- 252.227-7014 - Rights In Noncommercial Computer Software And Noncommercial Computer Software Documentation (JUN 1995) - Alternate I (JUN 1995)
- 252.227-7016 - Rights In Bid Or Proposal Information (JUN 1995)
- 252.227-7019 - Validation Of Asserted Restrictions--Computer Software (JUN 1995)
- 252.227-7025 - Limitations On The Use Or Disclosure Of Government-Furnished Information Marked With Restrictive Legends (JUN 1995)
- 252.227-7026 - Deferred Delivery Of Technical Data Or Computer Software (APR 1988)
- 252.227-7030 - Technical Data--Withholding Of Payment (MAR 2000)
- 252.227-7034 - Patents--Subcontracts (APR 1984)
- 252.227-7036 - Declaration Of Technical Data Conformity (JAN 1997)
- 252.227-7037 - Validation Of Restrictive Markings On Technical Data (SEP 1999)
- 252.227-7039 - Patents--Reporting Of Subject Inventions (APR 1990)
- 252.231-7000 - Supplemental Cost Principles (DEC 1991)
- 252.232-7003 - Electronic Submission Of Payment Requests (MAR 2003)
- 252.235-7010 - Acknowledgment Of Support And Disclaimer (MAY 1995)
- 252.235-7011 - Final Scientific Or Technical Report (SEP 1999)
- 252.242-7000 - Post Award Conference (DEC 1991)
- 252.242-7004 - Material Management And Accounting System (DEC 2000)
- 252.243-7002 - Requests For Equitable Adjustment (MAR 1998)
- 252.244-7000 - Subcontracts For Commercial Items And Commercial Components (DOD Contracts) (MAR 2000)



- 252.245-7001 - Reports Of Government Property (MAY 1994)
- 252.247-7023 - Transportation Of Supplies By Sea (MAY 2002)
- 252.247-7024 - Notification Of Transportation Of Supplies By Sea (MAR 2000)  
(will be included if the successful offeror made a negative response to the inquiry at DFARS 252.247-7022)
- 252.251-7000 - Ordering From Government Supply Sources (OCT 2002)

**I-2 far 52.223-11 - Ozone-Depleting Substances (MAY 2001)**

(a) *Definitions.* "Ozone-depleting substance", as used in this clause, means any substance the Environmental Protection Agency designates in 40 CFR Part 82 as –

- (1) Class I, including, but not limited to, chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform; or
- (2) Class II, including, but not limited to, hydrochlorofluorocarbons.

(b) The Contractor shall label products which contain or are manufactured with ozone-depleting substances in the manner and to the extent required by 42 U.S.C. 7671j (b), (c), and (d) and 40 CFR Part 82, Subpart E, as follows:

**WARNING**

Contains (or manufactured with, if applicable) \_\_\_\_\_, a substance(s) which harm(s) public health and environment by destroying ozone in the upper atmosphere.

\*The Contractor shall insert the name of the substance(s).

**PART III - LIST OF DOCUMENTS, EXHIBITS, AND OTHER ATTACHMENTS**

**SECTION J**

**LIST OF ATTACHMENTS**

- J-1** Attachment (1) - Statement Of Work - 8 Pages, With Exhibit A - DD Form 1423, Contract Data Requirements List, 3 Pages.
- J-2** Attachment (2) - DD Form 254, Contract Security Classification Specification, Ser 058-03 Dated 05 Dec 2003, 2 Pages.
- J-3** Attachment (3) – Personnel Qualifications, 3 Pages.
- J-4** Attachment (4) – Accounting and Appropriation Data- 1 Page. \*

(\* To be included at time of award)

**PART IV - REPRESENTATIONS AND INSTRUCTIONS  
SECTION - K  
REPRESENTATIONS, CERTIFICATIONS  
AND OTHER STATEMENTS OF OFFERORS OR RESPONDENTS**

**K-1 REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS OF OFFERORS OR RESPONDENTS**

Each offeror must submit a completed Representations, Certifications, and Other Statements of offerors or respondents with its proposal which is available electronically in full text at <http://heron.nrl.navy.mil/contracts/rep&certs.htm>

Use Representations and Certifications: A

**K-2 FILL IN FOR FAR 52.219-1 - SMALL BUSINESS PROGRAM REPRESENTATIONS (MAR 2001)**

THE FILL IN INFORMATION IS AS FOLLOWS:

The NAICS code for this acquisition is: **541710**

The small business size standard is. **500 employees**

**SECTION L  
INSTRUCTIONS CONDITIONS AND NOTICES  
TO OFFERORS OR RESPONDENTS**

**L-1 52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)**

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

<http://www.arnet.gov/far>  
<http://heron.nrl.navy.mil/contracts/home.htm>

<b><u>FAR CLAUSE</u></b>	<b><u>TITLE</u></b>
52.204-6	- Data Universal Numbering System (DUNS) Number (OCT 2003)
52.204-7	- Central Contractor Registration (OCT 2003)
52.214-34	- Submission Of Offers In The English Language (APR 1991)
52.214-35	- Submission Of Offers In U.S. Currency (APR 1991)
52.215-1	- Instructions To Offerors- Competitive Acquisition (MAY 2001)
52.215-16	- Facilities Capital Cost Of Money (JUN 2003)
52.222-24	- Preaward On-Site Equal Opportunity Compliance Evaluation (FEB 1999)
52.237-10	- Identification Of Uncompensated Overtime (OCT 1997)

**DFAR CLAUSE TITLE**

252.209-7001- Disclosure Of Ownership Or Control By The Government Of A Terrorist Country  
(MAR 1998)

**L-2 INSTRUCTIONS FOR SUBMISSION OF PROPOSALS/OFFERS**

All proposals shall be submitted in accordance with FAR 52.215-1- *Instructions to Offerors-Competitive Acquisition*. Proposals/offers submitted in paper media through the United States Postal Service (USPS) or delivery services shall be addressed to:

Contracting Officer, ATTN: **Code 3235**

Naval Research Laboratory-SSC

Stennis Space Center, MS 39529-5004

Solicitation/RFP No. – **N00173-04-R-JR01**

Closing Date: **20 Jan 2004** Time **4:00 PM CST**

Proposals may be hand delivered to the Contracting Office, NRL-SSC, Bldg 1007, Rm 47, Stennis Space Center, MS 39529-5004, between the hours of 8AM until 4PM, local time, excluding weekends and federal holidays. Stennis Space Center is a controlled-access facility. Photo identification will be required. Report first to South Reception Center, for access to Stennis Space Center. Visitors must be escorted onto the site by authorized NRL personnel. After receiving a Visitor Pass, contact the visited person via the on-site phone system. All offerors shall allow sufficient time for delivery of their proposal to the Contracting Office prior to the closing date and time announced in the solicitation. Directions and additional information about NRL-SSC is available at <http://www.nrl.navy.mil/aboutdc.htm>

**L-3 FAR 52.211-14 - NOTICE OF PRIORITY RATING FOR NATIONAL DEFENSE USE (SEP 1990)**

Any contract awarded as a result of this solicitation will be a ☐ DX rated order; ☒ DO rated order certified for national use under the Defense Priorities and Allocations system (DPAS) (15 CFR 700), and the Contractor will be required to follow all of the requirements of this regulation.

**L-4 FAR 52.215-20 REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA (OCT 1997)ALTERNATE IV (OCT 1997)**

(a) Submission of cost or pricing data is not required.

(b) Provide information described in Section L-12, L-13, L-14, and L-15

**L-5 FAR 52.216-1 - TYPE OF CONTRACT (APR 1984)**

The Government contemplates award of a Cost Plus Fixed Fee, Term type contract resulting from this solicitation.

**L-6 FAR 52.233-2 - SERVICE OF PROTEST (AUG 1996)**

(a) Protests, as defined in Section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO) shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from the Control Desk, Code 3200, Bldg. 222, Rm. 115, Naval Research Laboratory, 4555 Overlook Ave., S.W., Washington DC 20375-5326.

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

**L-7 DFARS 252.227-7017 - IDENTIFICATION AND ASSERTION OF USE, RELEASE, OR DISCLOSURE RESTRICTIONS (JUN 1995)**

(a) The terms used in this provision are defined in following clause or clauses contained in this solicitation—

(1) If a successful offeror will be required to deliver technical data, the Rights in Technical Data--Noncommercial Items clause, or, if this solicitation contemplates a contract under the Small Business Innovative Research Program, the Rights in Noncommercial Technical Data and Computer Software--Small Business Innovative Research (SBIR) Program clause.

(2) If a successful offeror will not be required to deliver technical data, the Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation clause, or, if this solicitation contemplates a contract under the Small Business Innovative Research Program, the Rights in Noncommercial Technical Data and Computer Software--Small Business Innovative Research (SBIR) Program clause.

(b) The identification and assertion requirements in this provision apply only to technical data, including computer software documents, or computer software to be delivered with other than unlimited rights. For contracts to be awarded under the Small Business Innovative Research Program, the notification requirements do not apply to technical data or computer software that will be generated under the resulting contract. Notification and identification is not required for restrictions based solely on copyright.

(c) Offers submitted in response to this solicitation shall identify, to the extent known at the time an offer is submitted to the Government, the technical data or computer software that the Offeror, its subcontractors or suppliers, or potential subcontractors or suppliers, assert should be furnished to the Government with restrictions on use, release, or disclosure.

(d) The Offeror's assertions, including the assertions of its subcontractors or suppliers or potential subcontractors or suppliers shall be submitted as an attachment to its offer in the following format, dated and signed by an official authorized to contractually obligate the Offeror:

**Identification and Assertion of Restrictions on the Government's Use, Release, or Disclosure of Technical Data or Computer Software.**

The Offeror asserts for itself, or the persons identified below, that the Government's rights to use, release, or disclose the following technical data or computer software should be restricted:

Technical Data Computer Software to be Furnished With Restrictions*	Basis for Assertion **	Asserted Rights Category ***	Name of Person Asserting Restrictions****
(List)*****	(List)	(List)	(List)

\* For technical data (other than computer software documentation) pertaining to items, components, or processes developed at private expense, identify both the deliverable technical data and each such items, component, or process. For computer software or computer software documentation identify the software or documentation.

\*\* Generally, development at private expense, either exclusively or partially, is the only basis for asserting restrictions. For technical data, other than computer software documentation, development refers to development of the item, component, or process to which the data pertain. The Government's rights in computer software documentation generally may not be restricted. For computer software, development refers to the software. Indicate whether development was accomplished exclusively or partially at private expense. If development was not accomplished at private expense, or for computer software documentation, enter the specific basis for asserting restrictions.

\*\*\* Enter asserted rights category (e.g., government purpose license rights from a prior contract, rights in SBIR data generated under another contract, limited, restricted, or government purpose rights under this or a prior contract, or specially negotiated licenses).

\*\*\*\* Corporation, individual, or other person, as appropriate.

\*\*\*\*\* Enter "none" when all data or software will be submitted without restrictions.

Date \_\_\_\_\_

Printed Name and Title \_\_\_\_\_

Signature \_\_\_\_\_

(End of identification and assertion)

- (e) An offeror's failure to submit, complete, or sign the notification and identification required by paragraph (d) of this provision with its offer may render the offer ineligible for award.
- (f) If the Offeror is awarded a contract, the assertions identified in paragraph (d) of this provision shall be listed in an attachment to that contract. Upon request by the Contracting Officer, the Offeror shall provide sufficient information to enable the Contracting Officer to evaluate any listed assertion.

**L-8 DFARS 252.227-7028 - TECHNICAL DATA OR COMPUTER SOFTWARE PREVIOUSLY DELIVERED TO THE GOVERNMENT (JUN 1995)**

The Offeror shall attach to its offer an identification of all documents or other media incorporating technical data or computer software it intends to deliver under this contract with other than unlimited rights that are identical or substantially similar to documents or other media that the Offeror has produced for, delivered to, or is obligated to deliver to the Government under any contract or subcontract. The attachment shall identify - -

- (a) The contract number under which the data or software were produced;
- (b) The contract number under which, and the name and address of the organization to whom, the data or software were most recently delivered or will be delivered; and
- (c) Any limitations on the Government's rights to use or disclose the data or software, including, when applicable, identification of the earliest date the limitations expire.

**L-9 GOVERNMENT-FURNISHED PROPERTY**

No material, labor, or facilities will be furnished by the Government unless provided for in the solicitation.

**L-10 INQUIRIES CONCERNING THE RFP**

Any questions concerning the RFP must be submitted in writing to the Contracting Officer at the location noted in blocks 7 and 9 of the Standard Form 33, "Solicitation, Offer and Award," no less than fifteen (15) days before closing. The Government will not consider questions received after this date. Offerors are cautioned against directing any questions concerning this RFP to technical personnel at the Naval Research Laboratory.

**L-11 PROPOSAL ORGANIZATION**

(1) Information for the technical/management proposal shall be placed in Volume I and be completely separate from the business proposal (Volume II).

(2) Proposal Format and Length - No attempt is made to restrict the proposal format and style. However, the proposal should be written and organized so as to be compatible with the RFP, the Statement of Work, company's organization and accounting structure, and proposed cost estimate. Offerors are encouraged to use recycled paper and maximize the use of double sided copying when preparing responses to solicitations.

## **L-12 VOLUME I - TECHNICAL/MANAGEMENT PROPOSAL**

REQUIRED COPIES: 1 ORIGINAL AND 3 COPIES .

(1) Offerors must propose in accordance with H-3, Level of Effort, and the Government's estimate for the maximum travel and materials in accordance with Sections L-14 and L-15. If the Offeror uses a labor category other than that identified in Section H-3, the Offeror must provide a matrix clearly relating their proposed labor categories to those in Section H-3.

(2) The following information is required for evaluation of your technical/management :

### **A. PERSONNEL QUALIFICATIONS**

The proposal should indicate the offerors ability to provide the specific personnel to be assigned to this project, which shall cover:

- (1) the appropriate qualifications set forth in Attachment No.3, Personnel Qualifications, of the RFP;
- (2) their actual relevant experience (both general and project related), in the technical and scientific areas set forth in Attachment No.1, Statement of Work (SOW).
- (3) Their possession of or ability to obtain the required Secret and/or Top Secret clearance

The proposal should indicate the availability of proposed key project professional and technical personnel to support the effort on a permanent basis. Key personnel must be currently employed by the offeror or documentation included showing their immediate availability. A statement of commitment by the offeror that specific personnel will be committed to the effort is essential, and the amount of effort each will be performing against the resulting contract.

### **B. TECHNICAL UNDERSTANDING**

The proposal should indicate that the offeror has a complete understanding and provide a response to all tasks set forth under the Statement of Work, Attachment No. (1). The proposal should demonstrate the offerors technical expertise with respect to each technical requirement listed in the SOW, the offerors stated approach to meeting each technical requirement listed in the SOW, the offerors estimates for the personnel and/or physical resources required for meeting each technical requirement listed in the SOW, and the offerors description of how the different tasks can be effectively and efficiently managed with minimum assistance from Government personnel.

A simple statement of understanding or playback of the SOW will be considered as non-responsive.

### **C. CORPORATE EXPERIENCE**

The proposals will be evaluated on the offerors' demonstrated capacity to routinely and rapidly respond to the general science, engineering, and support requirements of a research laboratory. The proposal will also be evaluated on the offerors' demonstrated capability to meet the specific technical requirements listed in the Statement of Work. Examples and references from within the previous five years must be provided for the prime contractor and proposed subcontractors.

The proposal should address the ability to administratively support "on-site" efforts with minimum demands upon Government personnel for assistance.

The proposals will be evaluated on the sufficiency of the offerors' staff to accommodate program changes within the scope of the SOW.

#### **D. PAST PERFORMANCE INFORMATION**

(a) Offerors shall submit the following information as part of their proposal. (*Offerors are encouraged to submit the information prior to other parts of the proposal to assist the government in reducing the length of the evaluation period.*) List the last **three (3)** contracts or subcontracts completed by the offeror or predecessor companies during the past **three (3)** years for services similar in nature to this requirement. Include in the **three (3)** any current contracts or subcontracts for similar services that were awarded at least one year prior to the date of this solicitation. Offerors that have no similar previous or current contracts should provide the requested information for proposed subcontractors that will perform major or critical aspects of the requirement or for the proposed project manager or key personnel responsible for major or critical aspects of the requirement.

1. Name of contracting organization.
2. Contract number
3. Contract type
4. Total contract value
5. Description of the contract work
6. Contracting officer and telephone number
7. Contracting officer's representative, program manager, or similar official and telephone number

(b) Offerors shall contact the contracting organizations identified pursuant to paragraph (a) as soon as possible and request them to send past performance information on the identified contracts to the address in Block 7 of the face page of this solicitation. The past performance report which is available electronically in full text at <http://heron.nrl.navy.mil/contracts/home.htm> is to be provided to the contracting organization for this purpose. If the contracting organization has already collected past performance information on the contract pursuant to FAR Subpart 42.15, the format used to collect the information may be used instead of the past performance report.

(c) Offerors may include in their proposals specific information relating to problems encountered in performing the identified contracts and any corrective actions by the offeror. Offerors should not provide general information on their performance on the identified contracts as this will be obtained from the contracting organizations.

#### **L-13 VOLUME II - BUSINESS PROPOSAL**

REQUIRED COPIES: 1 ORIGINAL AND 3 COPIES

##### **(1) COST PROPOSAL**

The offeror shall submit a business proposal that includes a cost proposal with supporting information for each cost element consistent with offeror's cost accounting system. The supporting breakdown should include such elements as materials, direct labor, indirect cost, and other costs such as travel. The offeror shall provide exhibits as necessary to substantiate each cost element. Should rates be used in the proposal which are not DCAA approved, the offeror shall provide complete documentation and the rationale for their use at time of proposal submission. However, offerors are advised to use actual labor rates of proposed personnel as the basis for estimating labor costs when practicable.

It is requested that the offeror provide one copy of their cost proposal on a PC formatted disk or CD ROM using software that is compatible with Microsoft Excel V.5.1



**(2) SMALL BUSINESS PARTICIPATION**

(a) In addition to complying with the clause at FAR 52.219-9, Small Business Subcontracting Plan (JAN 2002) with its Alternate II (OCT 2000), proposals must include information to permit evaluation of the extent of participation of small businesses and historical black colleges or universities and minority institutions in performance of the contract. Participation to be identified may be in the form of a joint venture, teaming arrangement, or subcontract. Small business concerns that are not required by FAR 52.219-9 to submit a subcontracting plan must indicate the extent to which proposed joint ventures, teaming arrangements, or subcontracts are with historically black colleges or universities and minority institutions. Information provided should include the extent of participation of such firms in terms of the value of the total acquisition and the complexity and variety of the work such firms are to perform.

**L-14 MATERIAL ESTIMATES (FOR EVALUATION PURPOSES ONLY)**

(a) The material estimates set forth MUST be included in each offerors cost proposal for evaluation purposes only. During the term of the contract, the contractor will be reimbursed actual and verifiable material and other direct associated expenses.

(b) The government estimates the material costs for this effort to be as shown in the matrix below:

	<b>BASE</b>	<b>OPTION 1</b>	<b>OPTION 2</b>	<b>OPTION 3</b>	<b>OPTION 4</b>
<b>Materials</b>	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000

**L-15 TRAVEL ESTIMATES (FOR EVALUATION PURPOSES ONLY)**

(a) The travel estimates set forth MUST be included in each offerors cost proposal for evaluation purposes only. During the term of the contract, the contractor will be reimbursed actual and verifiable travel and other direct associated expenses.

(b) The government estimates the travel costs for this effort to be as shown in the matrix below:

	<b>BASE</b>	<b>OPTION 1</b>	<b>OPTION 2</b>	<b>OPTION 3</b>	<b>OPTION 4</b>
<b>Travel</b>	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000

**SECTION M**  
**EVALUATION FACTORS FOR AWARD**

**M-1 EVALUATION**

Award will be made to that offeror whose proposal is determined to be the best value to the Government, proposed cost and other factors considered. The Government reserves the right to make award to other than the low offeror. Although technical considerations are more important than the cost factor, the closer the technical scores of the various proposals are to one another, the more important the business considerations become.

**M-2 EVALUATION FACTORS FOR AWARD**

Proposals will be evaluated in accordance with the following criteria. The technical factor is more important than the cost factor.

**M-2-1. TECHNICAL/MANAGEMENT**

**(1) PERSONNEL QUALIFICATIONS**

The proposal will be evaluated on the offerors demonstrated ability to provide the specific personnel to be assigned to this project, which shall cover:

- (a) the appropriate qualifications set forth in Attachment No.3, Personnel Qualifications, of the RFP;
- (b) their actual relevant experience (both general and project related), in the technical and scientific areas set forth in Attachment No.1, Statement of Work (SOW).
- (c) Their possession of or ability to obtain the required Secret and/or Top Secret clearance

The proposal will be evaluated on the availability of proposed key project professional and technical personnel to support the effort on a permanent basis. Key personnel must be currently employed by the offeror or documentation included showing their immediate availability. A statement of commitment by the offeror that specific personnel will be committed to the effort is essential, and the amount of effort each will be performing against the resulting contract.

**(2) TECHNICAL UNDERSTANDING**

The proposals will be evaluated on the offerors complete understanding and response to all tasks set forth under the Statement of Work, Attachment No. (1). Evaluation of the offerors level of understanding of the SOW tasks will be based on the offerors demonstrated technical expertise with respect to each technical requirement listed in the SOW, the offerors stated approach to meeting each technical requirement listed in the SOW, the offerors estimates for the personnel and/or physical resources required for meeting each technical requirement listed in the SOW, and on the offerors description of how the different tasks can be effectively and efficiently managed with minimum assistance from Government personnel.

A simple statement of understanding or playback of the SOW will be considered as non-responsive.

**(3) CORPORATE EXPERIENCE**

The proposals will be evaluated on the offerors' demonstrated capacity to routinely and rapidly respond to the general science, engineering, and support requirements of a research laboratory. The proposal will also be evaluated on the offerors' demonstrated capability to meet the specific technical requirements listed in the Statement of Work. Examples and references from within the previous five years must be provided for the prime contractor and proposed subcontractors.

The proposal will be evaluated on the offeror's ability to administratively support "on-site" efforts with minimum demands upon Government personnel for assistance.

The proposals will be evaluated on the sufficiency of the offerors' staff to accommodate program changes within the scope of the SOW.

**(4) PAST PERFORMANCE**

Past performance will be evaluated on the basis of the quality of the work performed, timeliness of performance, cost control, and business relations. The evaluation will be based on the information provided pursuant to Section L and other sources if available. The evaluation will take into account past performance information regarding predecessor companies, subcontractors that will perform major or critical aspects of the requirement, or the proposed project manager or key personnel responsible for major or critical aspects of the requirement. Offerors that have no relevant performance history or for which past performance information is not available will not be evaluated favorably or unfavorably on past performance. The government may begin proposal evaluation prior to receipt of past performance information. If, after completion of proposal evaluation except evaluation of past performance, the contracting officer determines that evaluation of past performance will not affect the outcome of competitive selection, the contracting officer may waive its evaluation in accordance with FAR 15.304(c)(3)(iv).

**M-2-2 COST TO THE GOVERNMENT**

Proposed estimated cost to the Government. The Government may adjust the proposed cost for purposes of evaluation based upon an evaluation of cost realism. Cost Realism means that the costs in an offeror's proposal are realistic for the work to be performed; reflect a clear understanding of the requirements; and are consistent with the various elements of the offeror's technical proposal. The cost realism evaluation includes an analysis of the adequacy of the hours, labor mix, and other direct costs to perform the work as proposed in the technical proposal as well as the proposed labor and indirect rates. It also includes evaluation of the likelihood that the risks inherent in the offeror's technical approach will result in higher actual costs than anticipated.

**M-2-3 SMALL BUSINESS PARTICIPATION**

(a) The extent of participation of small businesses and historically black colleges or universities and minority institutions in performance of the contract will be evaluated on the basis of the proposed extent of participation of such firms in terms of the value of the total acquisition and the complexity and variety of the work such firms are to perform.

**M-3 FAR 52.217-5 - EVALUATION OF OPTIONS (JUL 1990)**

Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interests, the Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of options will not obligate the Government to exercise the option(s).

## STATEMENT OF WORK

### 1.0 BACKGROUND

The Naval Research Laboratory conducts research in the fields of astronomy and astrophysics, solar-terrestrial physics and atmospheric science. Satellites, rockets, and ground-based facilities are used to obtain the behavior of the ionosphere and the upper, middle, and lower atmospheres. Results are of importance to radio communications, to the operation of ships and aircraft, to utilization of the space environment, and to fundamental understanding of natural radiation and geophysical phenomena.

In order to carry out such investigations as pertain to this solicitation, research and development is needed for satellite instrumentation, data analysis, remote sensing methods, first-principles modeling of atmospheric processes, signal propagation, supporting calibration/validation activities, and supporting missile defense modeling-and-simulation systems development. The more theoretical aspects of the work including modeling, data analysis, and development and use of remote sensing techniques will be documented in peer-reviewed publications. Specifics regarding the above areas of investigation and support follow under Requirements.

### 2.0 SCOPE

This contract will provide R&D expertise for experimental and theoretical support to NRL projects using on-site and off-site personnel. Experiment support includes calibration, upgrades, repairs, refurbishments, and flat fielding of optical systems. Theoretical support includes modeling of processes in the middle and upper atmospheres, development and application of remote sensing techniques (from microwave to far ultraviolet wavelengths), data analysis (solar and terrestrial), and investigations of signals utilizing trans-ionospheric propagation models. Support will also address missile defense high-fidelity modeling and simulation through requirements management, systems analysis, testing, and user support.

### 3.0 TECHNICAL REQUIREMENTS

3.1 The contractor shall provide hardware, analysis, and coordination support for space-based optical experiments whose objectives are remote sensing of atmospheric constituents

Experiments to be addressed are SSULI and GIMI that measure emissions from the upper atmosphere. The GIMI instrument was flown on the ARGOS satellite and a series of SSULI sensors will fly on future AF DMSP satellites. Requirements follow by instrument.

### 3.1.1 SSULI

There is a continuing need for ground calibration and support for the Special Sensor Ultraviolet Limb Imager (SSULI). SSULI employs a scanning mirror assembly to perform limb scans of the Earth from 50 to 750 km over the spectral region from 78 to 170 nm. Prior to launch, an instrument must be recalibrated regularly to maintain status as a launch-ready sensor. This position provides management of the numerous tasks involved with calibrating the SSULI instrument, as well as a point of contact with engineers responsible for calibration chamber maintenance, and instrument component upgrades. Responsibilities include setup of the calibration equipment, collection of the data from the SSULI instruments, analysis of the data, and reporting. Additional activities include participation in upgrades, repairs, and refurbishments of the SSULI instrument, as well as devising tests for validation of these upgrades.

### 3.1.2 GIMI

There is a continuing need for data analysis for the Global Imaging Monitor for the Ionosphere (GIMI). GIMI is a pair of imaging UV cameras mounted on the ARGOS spacecraft, one operating in the 83 nm range, the other in the 135 - 180 nm range, and monitors the ionosphere and thermosphere for spatial irregularities, as well as having astronomical observation capabilities. The GIMI must be flat-fielded and calibrated against HIRAAS data, and then searched for anomalous or irregular ionospheres. Two-dimensional inversion techniques to relate the brightness to an ionospheric density map must be developed. This research is to be coordinated with other researchers engaged in the theory and modeling of ionospheric inhomogeneities.

## 3.2 The contractor shall provide solar physics support for space based experiments measuring solar irradiances from the soft X-ray to the UV region

### 3.2.1 LASCO

The *Solar Physics Branch* has a continuing requirement of a senior research physicist to support the Large Angle and Spectrometric Coronagraph (LASCO) experiment. The primary activity of this individual is to develop new data processing methods to be applied to existing LASCO data. Algorithms must be written in the IDL programming language to generate these science products. These results must be presented at scientific meeting and published in the reviewed scientific literature. Support is required in the continuing efforts to calibrate and characterize the LASCO coronagraphs and to support the calibration and testing of new solar instruments currently being developed by the Solar Physics Branch.

### 3.2.2 OTHER SOLAR EXPERIMENTS

The *Solar Terrestrial Relationships Branch* has a broad program of scientific analysis, instrument development, and data reduction directed at improved understanding of the behavior of solar irradiances from the EUV to the X-ray region. Science products include publications in referred journals and continued development of the NRL solar EUV model.

3.3 The contractor shall perform theoretical investigations involving the modeling of processes in the upper atmosphere

There is a continuing need for the modeling thermospheric processes (dayside and auroral) in support of the Division's remote sensing activities. Processes of interest include photoionization, photodissociation, auroral electron transport, excitation by photoelectrons and auroral electrons, photon transport (for features such as OII 83.4 nm, OI 130.4 nm, and OI 135.6 nm), chemical reactions (for calculating ion and minor neutral densities), and transmission effects for emission from the extreme ultraviolet (EUV) and the near infrared (NIR). Validated models are required that accurately describe these processes and derive photoelectron and auroral spectra, production rates (by solar photons, photoelectrons, and chemical reactions), ion and neutral densities and spectral radiances as a function of look angle (from zenith and nadir viewing) and wavelength. Spectral radiances must include all important emission features from the EUV to the NIR. The outputs from these models will be used in sensitivity studies, for parameterization of production rates (to provide a fast technique of their specification in future applications to satellite data), data analyses (rocket and satellite), and development of remote sensing algorithms. The goals of the analyses and applications of these algorithms are to monitor solar EUV and densities of species.

3.4 The contractor shall perform theoretical investigations involving the modeling of processes and data analysis addressing the middle atmosphere

#### 3.4.1 FORECASTING OF MOUNTAIN-WAVE AMPLITUDES

An improved model is being developed for the operational forecasting of mountain-wave amplitudes and associated levels of turbulence (Mountain Wave Forecast Model [MWFM]). It will fully account for the three-dimensional propagation of the mountain waves and will have a much more realistic representation of the topography than the current formulation. It is expected that the methods to be developed here will also be applicable to non-orographic sources of gravity waves, such as those generated by deep tropical convection. The use of a new formulation for this purpose will also be pursued. The new formulation is to be based on advanced methods utilizing concepts in atmospheric gravity waves and advanced ray and caustic methods of the kind more commonly used in fields such as optics and semi-classical physics.

#### 3.4.2 MODEL-MEASUREMENT COMPARISON STUDY OF GRAVITY WAVES

Stratospheric temperature oscillations generated by Gravity Waves (GWs) can be remotely mapped by the Microwave Limb Sounder (MLS) onboard the UARS satellite. The combination of global GWs measured by MLS and simulated by the current MWFM and future versions provides valuable information about the geographical and seasonal distribution of GW activity, as well as the partition of orographic and non-orographic GWs. This information is needed for the accurate parameterization of GWs in GCMs. Efforts under this heading will be directed to development of an MLS filter for the MWFM code, mapping of observed and simulated MW activities, intercomparisons between the two, recommended GW parameterization for general circulation models.

### 3.4.3 MESOSCALE TEMPERATURE PERTURBATIONS (MTFS) DUE TO STRATOSPHERIC MOUNTAIN WAVES

With work underway leading to improvements in NRL's MWFM and the extensive database of global atmospheric analysis products available elsewhere, a first-ever multi-year simulation of mountain wave MTFs becomes possible. The contractor, in performing the simulations will utilize MWFM with different sets of meteorological data. Tasking will involve 1) the archiving of multi-year MWFM-derived global MTF products using various meteorological data sets, 2) analysis of any systematic differences among these different products, 3) deducing long-term trends in the MTF distributions, and 4) investigating possible interannual and geographical MTF variability and their relation to the evolution of polar vortices.

### 3.4.4 SABER SCIENCE SUPPORT AND PHOTOCHEMICAL MODELING

The Sounding of the Atmosphere using Broadband Emission Radiometry (SABER) experiment is one of four instruments on the Thermosphere Ionosphere Mesosphere Energetics and Dynamics (TIMED) spacecraft that was launched in December, 2001. The primary objectives of this experiment are to develop a better understanding of the mesosphere and lower thermosphere in terms of structure, dynamics, transport, their role in the energy budget, and to develop a climatology of key atmospheric parameters in the region from 60 to 130 km. Areas to be addressed are data assimilation, data processing, image processing, image analysis, and interpretation of scientific results.

NRL is continuing to develop and use various atmospheric chemistry models to support data analyses and studies directed to improve understanding of the dynamics, heating, and composition of the middle atmosphere. The contractor shall provide programming support in the use of these codes, particularly in interpretation and understanding of global distributions of various chemical species measured by instruments such as HALOE (HALogen Occultation Experiment) and SHIMMER (Spatial Heterodyne IMager for MESospheric Radicals) which NRL has built and has flown successfully on a proof of concept flight on STS-112.

3.5 The contractor shall provide algorithm development and analysis support for space based solar occultation experiments

The contractor shall develop algorithms to accurately model atmospheric extinction of the solar irradiance at far ultraviolet wavelengths, and to retrieve ozone and molecular oxygen density profiles from solar extinction data obtained by the SUSIM/UARS instrument. The SUSIM instrument views the full solar disk, which requires that the algorithms provide a detailed description of extinction for the sun as an extended source. The algorithms must be capable of extracting O<sub>3</sub> density profiles in the mesosphere and upper stratosphere, as well as thermospheric O<sub>2</sub> density profiles, with a vertical resolution of 3-5 km. Accurate error estimates must be calculated for all retrieved density profiles.



The forward model component of the algorithms must be general enough to provide realistic simulations of SUSIM occultation data as an aid in planning measurement strategies. In addition, the model must incorporate realistic spectral weighting functions for all SUSIM optical configurations, with sufficient accuracy to provide meaningful constraints on models of the instrument stray light component.

The contractor will also collaborate with NRL scientists in the analysis and interpretation of the SUSIM data set. This task requires the construction of databases for the purpose of validating the SUSIM retrievals with complementary data from UARS and other sources, as well theoretical investigations to analyze and interpret the extracted density profiles using current models of the middle and upper atmosphere.

3.6 The contractor shall provide support to the SSGM/BEST programs in the areas of user support, systems requirements, analysis, and testing

The Synthetic Scene Generation Model (SSGM) is a high-fidelity physics-based model that is used to predict ballistic missile defense (BMD) battlespace signatures from RF to visible wavelengths. The Battlespace Environment and Signatures Toolkit (BEST), a modeling toolkit with greater capabilities, will eventually replace SSGM. Both SSGM and BEST are sponsored by the Missile Defense Agency.

#### 3.6.1 SSGM/BEST USER SUPPORT

Currently SSGM has an ongoing need for user and technical support. BEST will require similar support starting in 2004. The primary responsibility of this task is to serve as both the administrative and technical point of contact for users of the SSGM and BEST software. A full range of user inquiries shall be addressed and resolved, including requests for software or materials, requests for technical information about the software or help installing and running it, and solicitations of assistance in designing, running, and debugging sophisticated scenarios. Web sites for SSGM and BEST shall be maintained to support the SSGM and BEST users. Interactions with users shall be used as an opportunity to elicit further requirements for and/or improvements of the models. These interactions will support the overall BEST requirements management tasks.

#### 3.6.2 BEST REQUIREMENTS MANAGEMENT

BEST is currently undergoing development with Release 1 scheduled for delivery by the development contractor in December 2003. The capabilities of future releases are driven by the needs of missile defense modeling and simulation (M&S) community. Requirements shall be solicited from the potential user through diverse methods, including interviews, surveys, and user group meetings. These requirements shall be collected and compiled in documents and stored in a database. To support the BEST development activities, these requirements shall be distilled into a conceptual model, which includes intended uses, use cases, and a domain model of the missile defense battlespace describing battlespace entities and interactions. Further analysis of these requirements shall be necessary to derive testable requirements for BEST. Also, top-level user requirements shall be traced to the features of BEST.

### 3.6.3 BEST CONCEPTUAL MODELING

A conceptual model of BEST is required to translate the requirements into a detailed design framework. A conceptual model is the collection of information which describes the simulation and its pieces. That information consists of physical assumptions, algorithms, physical interactions and relationships, and data. It shall be derived from the BEST system requirements and will serve as the basis for the software design of BEST. The conceptual model shall be built using state-of-the-art visual and textual techniques, including the Unified Modeling Language (UML) and use cases.

### 3.6.4 BEST SYSTEMS ANALYSIS

Technical oversight of the BEST development will be a continuing activity. Systems analysis support for BEST distributed simulation system shall be provided to ensure that implementation of the BEST requirements are accomplished using sound technical approaches. Oversight of software development practices, processes and procedures in support of BEST shall be performed with the goal of assuring that the BEST developer is following industry standard best practices in implementing the BEST system. 4. Expertise and guidance shall be provided in development of usable BEST client software that meets the needs and desires of the community of BEST users.

### 3.6.5 BEST TESTING

The BEST developer will deliver BEST to NRL for testing prior to release to the community. Test development and testing of the BEST system software shall be performed through the creation of test plans, development of tests, and the execution of test activities. This task shall support the goal of providing a viable and well-structured test program for system acceptance and software verification activities.

### 3.6.6 BEST VERIFICATION

Verification that BEST meets the systems requirements is needed. A verification plan shall be written and executed. Databases shall be developed to track the verification process and discovered deficiencies in the software.

### 3.6.7 BEST VALIDATION

Analysis of BEST will be required to determine the scientific validity and engineering quality of the software as it is being developed. Evaluations of the output and comparisons to truth data shall be performed. Additional scientific and/or engineering analysis activities shall be required to test the flexibility and capability limitations of the BEST software in the context of use by missile defense programs. Continual interaction with community experts, attendance at relevant meetings for the purposes of understanding the ballistic missile defense community's modeling and simulation requirements, and staying abreast of the research activities and latest developments associated with the field shall be required.

3.7 The contractor shall perform theoretical investigations addressing trans-ionospheric radio propagation with the use of data-driven ionospheric models

There is a continuing need to improve the prediction of trans-ionospheric effects on signals starting at a frequency in the vicinity of 20 MHz. Effects of interest are time delays and Doppler shifts. Expertise is required in deriving these effects using ray tracing and lookup table techniques. Of particular interest is the use of ionospheric models such as PRISM and GAIM that can be updated with ionospheric data, examples being NmF2 and HmF2 from ionosondes and TEC from GPS receivers. 3D electron density profiles from such models must be interfaced with software providing time delays and Doppler shifts with the overall goal being to improve their predictions in near-real-time scenarios.

3.8 The contractor shall provide support directed to the DMSP SSULI/SSUSI calibration/validation program

There will be a series of five DMSP cal/val programs, one for each launch of a DMSP satellite carrying the combination of SSULI and SSUSI far ultraviolet sensors. The validation portion of each program will address a variety of data products called environmental data records (EDRs). There are EDRs that will be derived from dayglow, nightglow, and auroral data. There are requirements for a senior physicist with extensive experience in far ultraviolet remote sensing. The duties under this heading will include the use of state-of-the-art airglow and auroral models in supporting team activities directed at data quality assessment and remote sensing algorithm assessment. There will be need to support investigations that make use of SSULI and SSUSI data in coincidence with ground-truth data from instruments/facilities such as ionosondes and incoherent scatter radars. For auroral EDR validations, there is particular interest in validating against coincident particle data from the J/5 sensor, also onboard the satellite. As part of such investigations, recommendations will be sought for algorithm improvements.

3.9 The contractor shall provide support to other selected programs:

**3.9.1 RADIO SIGNAL ANALYSIS**

There is a continuing need for a systems architect to work with NRL engineers in the design, development and deployment of next generation signal analysis tools. This work is done in, "Real Time", as well as post-processing. The basis for the work is the current suite of software and hardware signal analysis tools used by NRL engineers.

**3.9.2 ANALYSIS OF POAM III SOLAR OCCULTATION DATA**

The Polar Ozone and Aerosol Measurement (POAM III) instrument operates in a polar orbit, measuring solar extinction at nine wavelengths from the UV to near-infrared at 1 km vertical resolution. There is a continuing need for the development of forward modeling and retrieval algorithms for analysis of the POAM III data, as well as scientific analysis of the POAM III data products. The forward model must contain at a minimum the following components: (1) orbit codes for generating simulated satellite ephemeris data (2) atmospheric models (temperature, pressure, trace gases and aerosols), (3) high resolution (line-by-line) calculations of slant path atmospheric transmission profiles in the

POAM III spectral channels (including refractive effects), and (4) realistic models for simulation of the POAM III sun sensor and science channel operations.

The contractor will develop retrieval algorithms to analyze measured POAM III extinction profiles and extract O3, NO2, H2O and O2 density profiles, atmospheric temperature, and aerosol extinction across the POAM III spectral range. This includes algorithms for determining correct altitude grids using orbit ephemeris data, POAM III optical head potentiometer data and the science channel and sun sensor signals. Finally, comprehensive error analysis routines are required to calculate rigorous error bars on the retrieval products.

The contractor shall provide scientific analysis of the POAM III data products including, but not limited to, the following subjects: development of long-term climatologies of polar O3, NO2, H2O and aerosol extinction, analysis of the frequency distribution and formation/dissipation mechanisms of polar stratospheric clouds (PSC), validation and trend analysis of POAM III mesospheric temperature retrievals and development and analysis of a polar mesospheric cloud (PMC) database from the POAM III aerosol extinction measurements.

### 3.9.3 WINDSAT OPERATIONAL SOFTWARE AND ALGORITHM DEVELOPMENT

The WindSat passive microwave radiometer measures blackbody equivalent ("brightness") temperatures at vertical and horizontal polarizations centered on 5 atmospheric window frequencies between 6 and 37 GHz, and is fully polarimetric at three of these frequencies. WindSat will demonstrate the feasibility of using passive microwave polarimetry to measure the ocean surface wind vector, as well as other geophysical parameters including sea surface temperature, columnar cloud liquid water, and columnar precipitable water. There is a continuing need for the development of operational software to control all aspects of the satellite telemetry stream, including level 0 processing (geolocation, altitude determination, time stamping, radiometric calibration, etc), level 1 processing (antenna pattern correction, beam averaging of collocated brightness temperatures, etc) and level 2 processing (inversion of brightness temperature data to produce the desired geophysical parameters). The retrieval algorithms must incorporate physics-based forward model algorithms that include state of the art ocean models and radiative transfer in the coupled ocean-atmosphere system. The contractor will be responsible for designing, implementing and maintaining strict configuration management on all aspects of the evolving software and algorithms and for performing routine processing of the WindSat data in real time and making results available to NRL's NOAA collaborators and to other Navy organizations contractors.

# CONTRACT DATA REQUIREMENTS LIST

Form Approved  
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 440 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

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<b>16. REMARKS</b> Contractor shall provide software for each algorithm developed and supporting software documentation wrote during development of sftwr. Documentation should include source codes. All software will be provided in a format a						<table border="1"> <tr> <td colspan="2">CODE 7650</td> <td></td> <td></td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> </tr> <tr> <td colspan="2"><b>15. TOTAL</b></td> <td>1</td> <td></td> </tr> </table>				CODE 7650												<b>15. TOTAL</b>		1					
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<b>4. AUTHORITY (Data Acquisition Document No.)</b>				<b>5. CONTRACT REFERENCE</b>		<b>6. REQUIRING OFFICE</b>																							
<b>7. DD 250 REQ</b>		<b>8. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b>		<b>12. DATE OF FIRST SUBMISSION</b>		<b>14. DISTRIBUTION</b>																					
<b>8. APP CODE</b>				<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<table border="1"> <tr> <th colspan="2">a. ADDRESSEE</th> <th colspan="2">b. COPIES</th> </tr> <tr> <th>Draft</th> <th>Final</th> <th>Reg</th> <th>Repro</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>		a. ADDRESSEE		b. COPIES		Draft	Final	Reg	Repro												
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<b>G. PREPARED BY</b>				<b>H. DATE</b>		<b>I. APPROVED BY</b>		<b>J. DATE</b>																					

<b>17. PRICE GROUP</b>
<b>18. ESTIMATED TOTAL PRICE</b>

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<b>18. ESTIMATED TOTAL PRICE</b>

**Form Approved**  
**OMB No. 0704-0188**

A. CONTRACT LINE ITEM NO.	B. EXHIBIT	C. CATEGORY:
0002	A	TDP _____ TM _____ OTHER _____

D. SYSTEM / ITEM	E. CONTRACT / PR NO.	F. CONTRACTOR
OPTICAL EXPERIMENT SPPT	N00173-04-R-JR01	TBD

1. DATA ITEM NO.	2. TITLE OF DATA ITEM	3. SUBTITLE
A004	TECHNICAL ANALYSIS REPORTS	

4. AUTHORITY (Date Acquisition Document No.)	5. CONTRACT REFERENCE  CLIN 0002	6. REQUIRING OFFICE  NRL
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7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY  ASREQ	12. DATE OF FIRST SUBMISSION  ASREQ	14. DISTRIBUTION			
8. APP CODE		11. AS OF DATE  ASREQ	13. DATE OF SUBSEQUENT SUBMISSION ASREQ	a. ADDRESSEE	b. COPIES		
					Draft	Final	
						Reg	Repro

16. REMARKS		COR 7650	1
<p>The Contractor shall submit technical reports, for COR review and approval, for each completed analysis . Technical documentation which shall include designs, schematics, requirement documents, procedures, systems block diagrams, field integration documents, interface control documents, as built drawings, quality assurance test results, etc.</p>			
		15. TOTAL	

1. DATA ITEM NO.	2. TITLE OF DATA ITEM	3. SUBTITLE
A005	FINAL REPORT	

4. AUTHORITY (Data Acquisition Document No.)	5. CONTRACT REFERENCE  CLIN 0002	6. REQUIRING OFFICE  NRI
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7 DD 250 REQ <b>Y</b>	9. DIST STATEMENT REQUIRED	10. FREQUENCY <b>OTIME</b>	12. DATE OF FIRST SUBMISSION <b>60 DAC Completion</b>	14. DISTRIBUTION			
8. APP CODE		11. AS OF DATE <b>60 DAC Completion</b>	13. DATE OF SUBSEQUENT SUBMISSION <b>N/A</b>	a. ADDRESSEE	b. COPIES		
					Draft	Final	
						Reg	Repro

16. REMARKS		COR 7650		3	
Report shall include, at a minimum, a comprehensive interpretation of findings under this contract.					
15. TOTAL				3	

<b>G. PREPARED BY</b>	<b>H. DATE</b>	<b>I. APPROVED BY</b>	<b>J. DATE</b>

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

<b>17. PRICE GROUP</b>
<b>18. ESTIMATED TOTAL PRICE</b>

**Form Approved**  
**OMB No. 0704-0188**

A. CONTRACT LINE ITEM NO. 0002		B. EXHIBIT A	C. CATEGORY: TOP _____ TM _____ OTHER _____ F							
D. SYSTEM / ITEM OPTICAL EXPERIMENT SPPT		E. CONTRACT / PR NO. N00173-04-R-JR01		F. CONTRACTOR TBD						
1. DATA ITEM NO.  A006	2. TITLE OF DATA ITEM  CONTRACTOR ON-SITE LABOR REPORT		3. SUBTITLE							
4. AUTHORITY (Data Acquisition Document No.)  N/A		5. CONTRACT REFERENCE		6. REQUIRING OFFICE  NRL						
7. DD 250 REQ  LT	8. DIST STATEMENT REQUIRED  N/A	10. FREQUENCY  MNTLY	12. DATE OF FIRST SUBMISSION  45 DAC	14. DISTRIBUTION  a. ADDRESSEE  COR AO CODE						
9. APP CODE  N/A		11. AS OF DATE  45 DAC	13. DATE OF SUBSEQUENT SUBMISSION  7th Day of Each Month		b. COPIES Draft Final Reg Repr					
16. REMARKS The Contractor shall deliver the On-Site Labor Report no later than five (5) days after the end of each reporting month. The report must include as a minimum the following data:  Reporting Period: Contract Number (and Order Number, if applicable): Contract Value: Current Funding: Amount Expended in Current Period: Total Expended to Date: Date Submitted:  Labor (including subcontractors) - Show employee name, number of hours, and total amount billed for contractor employees working on-site at NRL. If the contractor employees worked on multiple tasks (as defined by the COR), the numbers of hours worked on each task must be shown separately.				0	1	0				
				0	1	0				
				15. TOTAL →						
				G. PREPARED BY  NRL CODE		H. DATE	I. APPROVED BY	J. DATE		

18. ESTIMATED TOTAL PRICE	
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<b>DEPARTMENT OF DEFENSE CONTRACT SECURITY CLASSIFICATION SPECIFICATION</b> <i>(The requirements of the DoD Industrial Security Manual apply to all security aspects of this effort.)</i>				<b>1. CLEARANCE AND SAFEGUARDING SER: 058-03</b> a. FACILITY CLEARANCE REQUIRED <div style="text-align: center; border: 1px solid black; padding: 2px;"><b>SECRET</b></div> b. LEVEL OF SAFEGUARDING REQUIRED <div style="text-align: center; border: 1px solid black; padding: 2px;"><b>NONE</b></div>																																																																																					
<b>2. THIS SPECIFICATION IS FOR: (X and complete as applicable)</b>				<b>3. THIS SPECIFICATION IS: (X and complete as applicable)</b>																																																																																					
a. PRIME CONTRACT NUMBER		<input checked="" type="checkbox"/>		a. ORIGINAL (Complete date in all cases)																																																																																					
b. SUBCONTRACT NUMBER		b. REVISED (Supersedes all previous specs)		REVISION NO.																																																																																					
<input checked="" type="checkbox"/> c. SOLICITATION OR OTHER NUMBER <div style="text-align: center;">76-5010-04</div>		DUE DATE (YYYYMMDD)		DATE (YYYYMMDD) <div style="text-align: center;">20031205</div>																																																																																					
c. SOLICITATION OR OTHER NUMBER <div style="text-align: center;">76-5010-04</div>		DATE (YYYYMMDD)		DATE (YYYYMMDD)																																																																																					
<b>4. IS THIS A FOLLOW-ON CONTRACT?</b> <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> YES         </div> <div> <input checked="" type="checkbox"/> NO. If Yes, complete the following:          Classified material received or generated under _____ (Preceding Contract Number) is transferred to this follow-on contract.       </div> </div>																																																																																									
<b>5. IS THIS A FINAL DD FORM 254?</b> <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> YES         </div> <div> <input checked="" type="checkbox"/> NO. If Yes, complete the following:          In response to the contractor's request dated _____, retention of the classified material is authorized for the period of _____.       </div> </div>																																																																																									
<b>6. CONTRACTOR (Include Commercial and Government Entity (CAGE) Code)</b>																																																																																									
a. NAME, ADDRESS, AND ZIP CODE  FOR RFP PURPOSES ONLY, NOT VALID FOR ACTUAL CONTRACT AWARD.		b. CAGE CODE		c. COGNIZANT SECURITY OFFICE (Name, Address, and Zip Code)  N/A																																																																																					
<b>7. SUBCONTRACTOR</b>																																																																																									
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<b>8. ACTUAL PERFORMANCE</b>																																																																																									
a. LOCATION  N/A		b. CAGE CODE		c. COGNIZANT SECURITY OFFICE (Name, Address, and Zip Code)  N/A																																																																																					
<b>9. GENERAL IDENTIFICATION OF THIS PROCUREMENT</b>  RESEARCH AREAS OF UPPER AIR PHYSICS, ASTRONOMY, ASTROPHYSICS AND REMOTE GEO-SENSING.																																																																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 40%;">10. CONTRACTOR WILL REQUIRE ACCESS TO:</th> <th style="width: 5%;">YES</th> <th style="width: 5%;">NO</th> <th style="width: 40%;">11. IN PERFORMING THIS CONTRACT, THE CONTRACTOR WILL:</th> <th style="width: 5%;">YES</th> <th style="width: 5%;">NO</th> </tr> <tr> <td>a. COMMUNICATIONS SECURITY (COMSEC) INFORMATION</td> <td></td> <td><input checked="" type="checkbox"/></td> <td>a. HAVE ACCESS TO CLASSIFIED INFORMATION ONLY AT ANOTHER CONTRACTOR'S FACILITY OR A GOVERNMENT ACTIVITY</td> <td><input checked="" type="checkbox"/></td> <td></td> </tr> <tr> <td>b. RESTRICTED DATA</td> <td></td> <td><input checked="" type="checkbox"/></td> <td>b. RECEIVE CLASSIFIED DOCUMENTS ONLY</td> <td></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>c. CRITICAL NUCLEAR WEAPON DESIGN INFORMATION</td> <td></td> <td><input checked="" type="checkbox"/></td> <td>c. 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- 12. PUBLIC RELEASE.** Any information (*classified or unclassified*) pertaining to this contract shall not be released for public dissemination except as provided by the Industrial Security Manual or unless it has been approved for public release by appropriate U.S. Government authority. Proposed public releases shall be submitted for approval prior to release ☐ Direct ☒ Through (*Specify*)

COMMANDING OFFICER, NAVAL RESEARCH LABORATORY, WASHINGTON, DC 20375-5320, CODE 7650

to the Directorate for Freedom of Information and Security Review, Office of the Assistant Secretary of Defense (Public Affairs) \* for review.  
\*In the case of non-DoD User Agencies, requests for disclosure shall be submitted to that agency.

- 13. SECURITY GUIDANCE.** The security classification guidance needed for this classified effort is identified below. If any difficulty is encountered in applying this guidance or if any other contributing factor indicates a need for changes in this guidance, the contractor is authorized and encouraged to provide recommended changes; to challenge the guidance or the classification assigned to any information or material furnished or generated under this contract; and to submit any questions for interpretation of this guidance to the official identified below. Pending final decision, the information involved shall be handled and protected at the highest level of classification assigned or recommended. (*Fill in as appropriate for the classified effort. Attach, or forward under separate correspondence, any documents/guides/extracts referenced herein. Add additional pages as needed to provide complete guidance.*)

Access to classified information is not required for the purpose of submitting a bid/proposal for this statement of work. However, prior to award of contract, the successful contractor will be required to have a SECRET facility clearance, and personnel available with DoD granted personnel security clearances commensurate with level of access required for performance of contract.

2003 DEC -9 A 9:11  
NRL CONTRACTS  
DIVISION

- 14. ADDITIONAL SECURITY REQUIREMENTS.** Requirements, in addition to ISM requirements, are established for this contract. ☐ Yes ☒ No  
(If Yes, identify the pertinent contractual clauses in the contract document itself, or provide an appropriate statement which identifies the additional requirements. Provide a copy of the requirements to the cognizant security office. Use Item 13 if additional space is needed.)

- 15. INSPECTIONS.** Elements of this contract are outside the inspection responsibility of the cognizant security office. ☐ Yes ☒ No  
(If Yes, explain and identify specific areas or elements carved out and the activity responsible for inspections. Use Item 13 if additional space is needed.)

- 16. CERTIFICATION AND SIGNATURE.** Security requirements stated herein are complete and adequate for safeguarding the classified information to be released or generated under this classified effort. All questions shall be referred to the official named below.

a. TYPED NAME OF CERTIFYING OFFICIAL SHELIA NEAL	b. TITLE CONTRACTING OFFICER, SECURITY	c. TELEPHONE ( <i>Include Area Code</i> ) (202) 767-2240/2391
---	---	--

d. ADDRESS (*Include Zip Code*)

NAVAL RESEARCH LABORATORY  
4555 OVERLOOK AVE. SW  
WASHINGTON, DC 20375-5320

e. SIGNATURE

*Shelia Neal*

**17. REQUIRED DISTRIBUTION**

- |                                     |   |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | a. CONTRACTOR   |
| <input type="checkbox"/>            | b. SUBCONTRACTOR  |
| <input checked="" type="checkbox"/> | c. COGNIZANT SECURITY OFFICE FOR PRIME AND SUBCONTRACTOR          |
| <input type="checkbox"/>            | d. U.S. ACTIVITY RESPONSIBLE FOR OVERSEAS SECURITY ADMINISTRATION |
| <input type="checkbox"/>            | e. ADMINISTRATIVE CONTRACTING OFFICER                             |
| <input checked="" type="checkbox"/> | f. OTHERS AS NECESSARY 1221.11, 7650, 7602                        |

**PERSONNEL QUALIFICATIONS**

**1. Senior Scientist:**

Must have a Ph.D. in Physics or Mathematics.

Must have a minimum 10 years of demonstrated experience in scientific requirements management and analysis.

Must have experience soliciting, documenting, managing, and analyzing physics-based software modeling requirements, including experience with use cases as applied to physics-based models.

Experience using the Unified Modeling Language (UML) with application to the modeling of physical domains is required.

Must also have a minimum of one year of experience developing physics-based models.

Experience with requirements management software, preferably Requisite Pro is required, as well as experience using software modeling tools such as Rational Rose or Magic Draw.

**2. Scientist:**

Must have a Ph.D. in Physics, Astronomy, Oceanography, Meteorology.

Must have a minimum of three years demonstrated experience in the fields of space physics, atmospheric physics, or remote sensing, specifically in the areas of instrumentation calibration, modeling, simulation, or data analysis.

Must have experience in developing analysis algorithms in the MATLAB, IDL, or FORTRAN programming languages.

The Scientist(s) supporting middle atmosphere work must have a minimum of three years of experience with the theory and numerical computation of waves or stratified fluids, in the atmospheric or oceanographic context, and familiarity with the implementation and analysis of ray methods and with the basic theory of diffraction and caustics.

Also, experience with finite difference or spectral methods for computational fluid dynamics is required.

The Scientist(s) supporting SSULI/SSUSI must have a minimum of three years of demonstrated experience with UV instrumentation calibration and work, including experience in performing and devising novel calibration techniques, and in developing analysis algorithms for line-fitting and instrument sensitivity in the IDL.

Knowledge in the area of ionospheric anomalies, especially large-scale density depletions is also required.

**3. Senior Physicist:**

Must have a Ph.D. in Physics, or Astronomy.

Must have a minimum of ten years demonstrated experience in fields of space physics, atmospheric physics, or remote sensing.

Extensive experience with development of algorithms to extract information from remote sensing data is required.

A record of refereed scientific publications and presentations before professional societies is required.

The Physicist(s) for LASCO must have experience with all aspects of satellite observations of the Sun to include instrument calibration and characterization, development of observing procedures and new observing modes, and the development of algorithms to generate new science products.

Experience in processing and analyzing coronal images using IDL in a UNIX environment is also required.

**4. Physicist:**

Must have a B.S. in Physics, Computer Science.

Must have at least three years demonstrated experience with scientific software development including requirements analysis, software design, software development, software testing, and user support for complex scientific and engineering applications.

Specific experience with military simulations, UNIX, Windows, shell scripting, visualization software, software installation on multiple systems is required.

Must have ability to interact with users covering a broad level of technical experience. FORTRAN, C/C++, JAVA programming skills are also required.

**5. Scientific Programmer:**

Must have B.S. in Physics, Mathematics, Atmospheric Physics, Meteorology, or a related field

Must have a minimum of five years demonstrated experience, knowledge, and familiarity in the following areas: data assimilation, data processing, numerical modeling, image processing, image analysis, and interpretation of scientific results addressing middle atmospheric chemistry and dynamics.

Must be proficient with FORTRAN and IDL programming in a UNIX/Linux environment.

**6. Senior Software Engineer:**

Must have a B.S. in Engineering, Physical Science, or Mathematics.

Must have a minimum of 10 years of experience with the software development process, including project management and execution, systems analysis, system design, programming, testing/verification, troubleshooting, and documentation.

Experience with object-oriented and distributed processing software systems is required.

Extensive knowledge of various operating systems including, but not limited to, Linux and Sun-OS is required, as well as a strong background in computer languages such as FORTRAN, C/C++, Java, and/or Perl.

The Software Engineer(s) supporting BEST testing must have a minimum of five years of experience in developing test strategies, processes, test scenarios, performing tests, and developing relevant documentation.

Specific experience with SQL, load/stress testing, defining requirements for quality assurance (QA) standards, methodologies and web life-cycle principles is also required.

The Software Engineer(s) performing radio signal analysis must have knowledge of database design especially ORACLE and SYBASE.

Experience in the areas of interpretation of scientific results; especially the effects of the ionosphere on HF signal propagation, is also required.

**7. Senior Software Architect:**

Must have an M.S. in Computer Science, Electrical Engineering, or a related field

Must have a minimum of ten years of demonstrated experience developing software systems, including a minimum of five years leading development efforts in the field of distributed processing or distributed simulations.

Knowledge of architectural patterns for enterprise and distributed systems is required.

Expert knowledge and demonstrated experience in distributed systems technology including, but not limited to, J2EE, CORBA, HLA, CCM, RTI, and web services is also required.

Expert knowledge and demonstrated experience using multiple programming languages including Java, C++, FORTRAN and familiarity with scripting languages such as Perl, Jython, or Python is required.

Working knowledge of XML technologies including XSLT, XML parsers, and XML Schema are also desired.